

Appln No. 09/694,079
Amdt date July 24, 2007
Reply to Office action of June 21, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-25. (Canceled)

26. (Previously Presented) The system of claim 75 wherein said timing data comprises one of timestamp information, timecode information, frame numbering information and global time of day.

27. (Canceled)

28. (Previously Presented) A hyperlinked reception system comprising:
a receiver in communication with a broadcast channel, the receiver decoding a digital broadcast signal transmitted over the broadcast channel to recover a video signal, a plurality of masks, and a plurality of object data packets included in the broadcast signal, each mask corresponding to a particular video frame of a video program and including graphics data associated with one or more video objects in the particular video frame, each mask including an identifier to an object mapping table included in at least a particular one of the plurality of object data packets, the object mapping table including an entry associated with each of the one or more video objects in the particular video frame, each entry in the object mapping table referencing one or more information data structures included in one or more of the plurality of object data packets, the information data structures including information associated with the corresponding video object; and

a display device in communication with said receiver, the display device overlaying one or more graphics images on a particular video frame based on the graphics data in the mask for the particular video frame, and

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a processor coupled to the receiver, the processor being configured to:

- receive a user selection associated with one of the graphics images overlaid on the particular video frame;
- retrieve the identifier of the object mapping table from the mask corresponding to the particular video frame responsive to the user selection;
- retrieve the object mapping table based on the retrieved identifier;
- locate the entry in the object mapping table for the video object associated with the one of the graphics images;
- identify the one or more information data structures referenced in the located entry;
- retrieve information in the identified one or more information data structures; and
- display the retrieved information on the display device.

29-32. (Canceled)

33. (Previously Presented) The system of claim 28, wherein said information data structures include information regarding goods and services for sale.

34. (Previously Presented) The system of claim 28, wherein said information data structures include non-commercial information.

35. (Previously Presented) The system of claim 28 wherein said information data structures include at least one of textual data and graphics data.

36. (Previously Presented) The system of claim 35 wherein each of the masks includes location information of the one or more video objects in the corresponding video frame.

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37. (Previously Presented) The system of claim 36 wherein said location information includes a graphics location reference that represents a fixed relation to a set of pixels associated with said one or more video objects.

38. (Previously Presented) The system of claim 37 wherein said graphics location reference includes an upper left most pixel in said associated pixel set.

39. (Previously Presented) The system of claim 37 wherein said graphics location reference includes a centroid pixel of said associated pixel set.

40. (Currently Amended) The system of claim 35 wherein each of the masks includes location and shape information of the one or more video objects in the corresponding video frame.

41. (Previously Presented) The system of claim 40 wherein said shape information is represented by the overlaid one or more graphics images of said one or more video objects.

42. (Previously Presented) The system of claim 40 wherein said shape information is represented by an outline of said one or more video objects.

43. (Previously Presented) The system of claim 40 wherein said shape information is represented by a mathematical representation of a set of pixels associated with said one or more video objects.

44-48. (Canceled)

49. (Previously Presented) The system of claim 28, further comprising:

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means for transmitting information related to a viewer request of the one or more information data structures to a remote location over a backchannel communications channel.

50. (Previously Presented) The system of claim 28, further comprising:
means for accepting from a viewer information regarding a commercial transaction, and completing said transaction.

51. (Previously Presented) The system of claim 50, wherein the information regarding a commercial transaction accepted from a viewer comprises at least one of a viewer's identifier, a viewers address, an identifier of a viewer's financial account, a viewer's password, a viewer's personal identification number, a quantity, a model, a size, a color, a descriptor of a good or service to be vended, and a price.

52. (Previously Presented) The system of claim 28, wherein two or more of the plurality of object data packets have equal timing information, and the processor processes a viewer request including an indication as to which of the two or more of the plurality of object data packets is to be processed for displaying information contained therein.

53-63. (Canceled)

64. (Previously Presented) A hyperlinked broadcast system comprising:
a video source providing a video program having a plurality of video frames;
a video encoder in communication with said video source, said video encoder producing a transport stream for transporting the video program;
an authoring tool providing mask data and object data for the video program;
a data packet stream generator in communication with said authoring tool and said video encoder, said data packet stream generator producing encoded data packets including a plurality of masks and a plurality of object data packets, each mask corresponding to a particular video

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frame of the video program and including graphics data associated with one or more video objects in the particular video frame, each mask including an identifier to an object mapping table included in at least a particular one of the plurality of object data packets, the object mapping table including an entry associated with each of the one or more video objects in the particular video frame, each entry in the object mapping table referencing one or more information data structures included in one or more of the plurality of object data packets, the information data structures including information associated with the corresponding video object;

a multiplexer system in communication with said video encoder and said data packet stream generator, said multiplexer generating a digital broadcast signal comprising an augmented transport stream from said transport stream and said encoded data packets; and
means for transmitting the digital broadcast signal to a receiver.

65. (Previously Presented) The system of claim 77 wherein said timing information comprises one of timestamp information, timecode information, frame numbering information and global time of day.

66. (Previously Presented) The system of claim 64 wherein said information data structures include at least one of textual data and graphics data.

67. (Previously Presented) The system of claim 64 wherein each of the masks includes location information of the one or more video objects in the corresponding video frame.

68. (Previously Presented) The system of 67 wherein said location information includes a graphics location reference that represents a fixed relation to a set of pixels associated with said one or more video objects.

69. (Previously Presented) The system of claim 68 wherein said graphics location reference includes an upper left most pixel in said associated pixel set.

70. (Previously Presented) The system of claim 68 wherein said graphics location reference includes a centroid pixel of said associated pixel set.

71. (Previously Presented) The system of claim 64 wherein each of the masks include location and shape information of the one or more video objects in the corresponding video frame.

72. (Previously Presented) The system of claim 71 wherein said shape information is represented by the overlaid one or more graphics images of said one or more video objects.

73. (Previously Presented) The system of claim 71 wherein said shape information is represented by an outline of said one or more video objects.

74. (Previously Presented) The system of claim 71 wherein said shape information is represented by a mathematical representation of a set pixels associated with said one or more video objects.

75. (Currently Amended) The ~~reception~~ system of claim ~~[[1]]~~ 28, wherein the mask further includes timing data, and the display device draws the one or more graphics images on a frame-by-frame basis based on the graphics data in the mask for the corresponding video frame, the drawing of the one or more graphics images being synchronized to the corresponding video frame based on the timing data in the corresponding mask.

76. (Currently Amended) The ~~reception~~ system of claim ~~[[1]]~~ 28, wherein each of the plurality of masks is compressed based on a compression algorithm.

77. (Currently Amended) The ~~broadcast~~ system of claim 64, wherein said video encoder provides timing information for each of the plurality of video frames of the video program provided by the video source to said data packet stream generator, and said data packet stream generator steps through the plurality of video frames and associates the timing information of each video frame to a corresponding mask.

78. (Currently Amended) The ~~broadcast~~ system of claim 64, wherein each of the plurality of masks is compressed based on a compression algorithm.

79. (Currently Amended) The ~~broadcast~~ system of claim 64, wherein the receiver is configured to:

- decode the digital broadcast signal to recover the plurality of masks and the plurality of object data packets;

- overlay one or more graphics images on a particular video frame based on the graphics data in the mask for the particular video frame;

- receive a user selection associated with one of the graphics images overlaid on the particular video frame;

- retrieve the identifier of the object mapping table from the mask corresponding to the particular video frame responsive to the user selection;

- retrieve the object mapping table based on the retrieved identifier;

- locate the entry in the object mapping table for the video object associated with the one of the graphics images;

- identify the one or more information data structures referenced in the located entry;

- retrieve information in the identified one or more information data structures; and

- display the retrieved information on a display device.

80. (Currently Amended) The ~~broadcast~~ system of claim 79, wherein the mask further includes timing data, and the display device draws the one or more graphics images on a frame-by-frame basis based on the graphics data in the mask for the corresponding video frame, the drawing of the one or more graphics images being synchronized to the corresponding video frame based on the timing data in the corresponding mask.

81. (Previously Presented) A hyperlinked reception method comprising:
decoding a digital broadcast signal transmitted over the broadcast channel to recover a video signal, a plurality of masks, and a plurality of object data packets included in the broadcast signal, each mask corresponding to a particular video frame of a video program and including graphics data associated with one or more video objects in the particular video frame, each mask including an identifier to an object mapping table included in at least a particular one of the plurality of object data packets, the object mapping table including an entry associated with each of the one or more video objects in the particular video frame, each entry in the object mapping table referencing one or more information data structures included in one or more of the plurality of object data packets, the information data structures including information associated with the corresponding video object;

overlaying one or more graphics images on a particular video frame based on the graphics data in the mask for the particular video frame;

receiving a user selection associated with one of the graphics images overlaid on the particular video frame;

retrieving the identifier of the object mapping table from the mask corresponding to the particular video frame responsive to the user selection;

retrieving the object mapping table based on the retrieved identifier;

locating the entry in the object mapping table for the video object associated with the one of the graphics images;

identifying the one or more information data structures referenced in the located entry;

retrieving information in the identified one or more information data structures; and
displaying the retrieved information on a display device.

82. (Previously Presented) The method of claim 81, wherein the mask further includes timing data, the method further comprising:

drawing the one or more graphics images on a frame-by-frame basis based on the graphics data in the mask for the corresponding video frame, the drawing of the one or more graphics images being synchronized to the corresponding video frame based on the timing data in the corresponding mask.

83. (Previously Presented) The method of claim 81, wherein each of the plurality of masks is compressed based on a compression algorithm.

84. (Previously Presented) A hyperlinked broadcast method comprising:
providing a video program having a plurality of video frames;
generating a transport stream for transporting the video program;
generating mask data and annotation data for the video program;
generating encoded data packets including a plurality of masks and a plurality of object data packets, each mask corresponding to a particular video frame of the video program and including graphics data associated with one or more video objects in the particular video frame, each mask including an identifier to an object mapping table included in at least a particular one of the plurality of object data packets, the object mapping table including an entry associated with each of the one or more video objects in the particular video frame, each entry in the object mapping table referencing one or more information data structures included in one or more of the plurality of object data packets, the information data structures including information associated with the corresponding video object;
generating a digital broadcast signal comprising an augmented transport stream from said transport stream and said encoded data packets; and

transmitting the digital broadcast signal to a receiver.

85. (Previously Presented) The method of claim 84 further comprising:
providing timing information for each of the plurality of video frames of the video program; and

stepping through the plurality of video frames and associating the timing information of each video frame to a corresponding mask.

86. (Previously Presented) The method of claim 84 further comprising:
compressing each of the plurality of masks based on a compression algorithm.

87. (Previously Presented) A hyperlinked reception system comprising:
a receiver receiving over one or more television broadcast signals a plurality of object data packets and a video program having a plurality of video frames, the object data packets including one or more object mapping tables including an entry associated with each of one or more video objects in a particular video frame, each entry in the object mapping table referencing one or more information data structures included in one or more of the plurality of object data packets, the information data structures including information associated with the corresponding video object; and

a display device in communication with said receiver, the display device overlaying one or more graphics images on a particular video frame based on associated mask data, the mask data including an identifier to a corresponding one of the one or more object mapping tables; and

a processor coupled to the receiver, the processor being configured to:

receive a user selection associated with one of the graphics images overlaid on the particular video frame;

retrieve the identifier of the object mapping table from the mask data corresponding to the user selection;

retrieve the object mapping table based on the retrieved identifier;

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locate the entry in the object mapping table for the video object associated with the one of the graphics images;

identify the one or more information data structures referenced in the located entry;

retrieve information in the identified one or more information data structures; and display the retrieved information on the display device.